REMARKS

Claims 1-17 are pending in the application and were rejected.

Claims 1-3, 5, 14 and 15 were rejected; Claims 4, 6-13, 16 and 17 have been objected to.

Claims 1, 4, 5, 6 and 15 have been amended as set forth herein.

Claims 1-17 remain pending in this application.

Reconsideration of the claims is respectfully requested.

I. CLAIM OBJECTIONS

The claims were objected to because of improper form in Claims 6-13 and 16-17.

Claim 6 is amended to remove the multiple dependency and to add the previously-considered limitation of claim 2. Claims 1, 4, and 5 are also amended to remove remaining artifacts of the European-style claims, and claim 15 is amended to add a missing "of". Entry is respectfully requested.

All objections are believed obviated, and are traversed, but if the Examiner has any remaining concerns, she is invited (and requested) to telephone the undersigned to resolve them.

The Applicants respectfully request that the Objections to Claims 6-13 and 16-17 be withdrawn.

II. CLAIM REJECTION UNDER 35 U.S.C. § 103

Claims 1, 2, 14 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. Kriegel et al "Using Sets of Feature Vectors for Similarity Search on Voxelized CAD Objects" SIGMOD 2003, June 9-12 (ACM), pages 587-598, hereinafter "Kriegel" in combination with U.S. Patent No. 6,091,842 to *Domanik et al*, hereinafter "Domanik". Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kriegel in combination with Domanik and further in view of U.S. Patent Publication No 2003/0036842 to *Hancock*, hereinafter "Hancock". Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kriegel in combination with U.S. Patent Publication No 2005/0175235 to *Luo, et al*, hereinafter Luo. The Applicant respectfully traverses the rejections.

Legal standards relating to obviousness determinations were discussed in a previous response, and are incorporated by reference.

Applicant again notes that Kriegel does not teach the significant limitations of the claims as alleged by the Office Action. For example, claim 1 requires determining the feature data for the object *on the basis of at least one property of the respective portions of the object* that are contained in the plurality of cells. Claim 5 includes a similar limitation. Nothing in Kriegel discusses doing anything on the basis of a "property of the respective portions of the object" as claimed. Since the Office Action does not actually show this limitation as taught in the art, but merely references an entire section of Kriegel, there is no *prima facie* rejection with regard to this element.

The final Office Action responds that

> At least at the abstract of Kriegel, Kriegel teaches "we explain how sets of feature vectors can be used for more effective and still efficient similarity search[es]." From this description, the ordinary skilled artisan would understand that the objects for consideration of image analysis with respect to "molecular biology and medical imaging" each of which could process similarities queries (searches) on a cell or plurality of cells, that the determination of feature data would be derived from a plurality of cells.
>
> The ordinary skilled artisan could have also easily analyzed and looked to the Kriegel reference to teach feature data that was based on the properties of portions of an object.
>
> Notwithstanding, Kriegel at page 587, Section 1, right column, paragraph one, also teaches, "this invention is based on mapping an object onto a set of feature vectors, i.e. an object is described in a point set." *Office Action, page 3.*

To complete the record for appeal, the portions of Kriegel referenced by the Examiner teach:

> In modern application domains such as multimedia, molecular biology and medical imaging, similarity search in database systems is becoming an increasingly important task. Especially for CAD applications, suitable similarity models can help to reduce the cost of developing and producing new parts by maximizing the reuse of existing parts. Most of the existing similarity models are based on feature vectors. In this paper, we shortly review three models which pursue this paradigm. Based on the most promising of these three models, we explain how sets of feature vectors can be used for more effective and still efficient similarity search. We first introduce an intuitive distance measure on sets of feature vectors together with an algorithm for its efficient computation. Furthermore, we present a method for accelerating the processing of similarity queries on vector set data. The experimental evaluation is based on two real world test data sets and points out that our new similarity approach yields more meaningful results in comparatively short time. *Kriegel, Abstract.*
>
> Especially, the development, design, manufacturing and maintenance

> of modern engineering products is a very expensive and complex task. Effective similarity models are required for two- and three-dimensional CAD applications to cope with rapidly growing amounts of data. Shorter product cycles and a greater diversity of models are becoming decisive competitive factors in the hard-fought automobile and aircraft market. These demands can only be met if the engineers have an overview of already existing CAD parts. In this paper, we introduce an effective and flexible similarity model for complex 3-D CAD data, which helps to find and group similar parts. This model is particularly suitable for voxelized data, which often occur in CAD applications. It is not based on the traditional approach of describing one object by a single feature vector but instead we map an object onto a *set of feature vectors*, i.e. an object is described by a *point set. Kriegel, page 587, emphasis in original.*

Close review of the portions relied upon by the Office Action make it clear that nothing whatsoever teaches, suggests, or implies determining the feature data for the object on the basis of at least one property of the respective portions of the object that are contained in the plurality of cells, as claimed. It simply isn't in there.

The final Office Action also makes reference to an "AutoCAD 2011 Help Dictionary", but does not supply a copy of this reference, and it is not of record. However, Applicant respectfully notes that, based on the title cited by the Examiner, this reference appears to post-date the instant application by several years, and so is neither prior art nor relevant to any argument as to what one of skill in the art would have understood in 2006 (the filing date of this application) or 2005 (the filing date of the priority application).

Further, the final Office Action makes reference to something called "JavaScript Mapping Library," and supplies what appears to be a printout from openlayers.org dated November 10, 2010.

This also is neither prior art nor relevant to any argument as to what one of skill in the art would have understood in 2006 (the filing date of this application) or 2005 (the filing date of the priority application).

This limitation is not taught by the references. The Examiner has not met her burden to show this feature in the references, and the rejection will be reversed on appeal.

The Kriegel clearly does not teach or consider any case where at least two of the plurality of cells overlap each other at least in part, as in claim 1. The Office Action does not allege any such teaching.

Instead, the Office Action refers to Domanik. Domanik is drawn to a "cytological specimen analysis system with slide mapping and generation of viewing path information" – the study of microscope-type slide images having biological cell material. This has nothing at all to do with the techniques disclosed by Kriegel with regard to using sets of feature vectors for similarity search on voxelized CAD objects. Domanik does not discuss voxels, and has no application to CAD systems or objects. These are disparate, non-analogous references.

Domanik basically teaches that a slide image can be divided into region "tiles", and that the depicted cell (which naturally covers most of the slide) would cover multiple tiles. This has nothing at all do to with the current claims or the Kriegel's system. Of course, the CAD "cells" described in Kriegel's system are completely unrelated to the biological cell shown in Domanik's slide image.

These references cannot be properly combined. No person of skill in the art in CAD systems, searching for a way to find similarity of CAD objects using feature vectors, would look to a system

that determines if regions of a slide image contain biological cell material No person would have any expectation of success in combining biological slide "tiles" into a CAD system – and it does not appear that any combination of these references would actually function.

The Examiner's stated "motivation" to combine Domanik's cytological slide system with Kriegel's CAD system is for improvements in screening and analyzing cytological specimens as taught in Domanik. Since there is no application in Domanik for analyzing voxels, feature objects, or feature vectors, this "motivation" is clearly incorrect. Domanik has no application in retrieval of similar 3D objects, as described by Kriegel, at all.

All rejections are traversed for improperly relying on unrelated and non-combinable teachings in Domanik.

The final Office Action responds that

> Kriegel and Domanik are combinable because they are in the same field of image processing with respect to image processing applications in relation to biomedical applications and more specifically, cell analysis, classification and counting.
>
> In response to applicant's argument that Domanik is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Domanik teaches image processing biomedical analysis on cells, cytological specimen as shown at the abstract and title of the invention. *Office Action, pages 4-5.*

This is incorrect. First, the statement that Kriegel is in the field of "image processing" is a mischaracterization. Kriegel is concerned with voxelized CAD objects. Kriegel references "previous approaches" that concerned digital images (*see page 587, last paragraph)* and states that "paradigm" of feature-based similarity has been applied to "color histograms in image databases" (*see page 588, second paragraph under 2.1*). Kriegel indicates that the authors "plan to example various other applications for similarity search, such as the retrieval of biomolegular data and images" (*see page 597, last paragraph on first column*). Kriegel itself is not in the field of image processing.

It is also a mischaracterization to state that Kriegel is in the field of "cell analysis, classification and counting". Kriegel uses the term "cell" to reference spatial divisions, and does not "analyze" a spatial cell itself. Kriegel gives its examples as cars and aircraft. Domanik, on the other hand, is related to actual, biological cells. These are completely different.

While Kriegel clearly has some relevance to the instant application, and is in fact discussed in paragraph 0004 of the present application, Domanik has no relevance whatsoever. Kriegel's system does not teach or suggest anything related to overlapping cells, overlapping groups of cells, or nested cells, and cannot function as claimed, and Domanik provides no relevant teaching other than using a common "cell" term, albeit with a completely different meaning.

Luo is directed to a system for pattern recognition for use in automobile occupant restrains systems. It is also non-analogous art, and does not cure the deficiencies of the Kreigel/Domanik combination. Hancock is drawn to a *geographic* nesting system, is also non-analogous art, and does

not cure the deficiencies of the Kreigel/Domanik combination. No combination of the references teach the limitations of the claims. It appears these disparate references were simply cited because they reference grids, with no concern for whether they are actually related at all to the CAD processes as claimed.

The various "suggestions/motivations" provided by the Examiner are also flawed. For example, while Domanik's technique for finding a path may reduce the time needed to examine a biological cell, this bears no relation at all to any of Kriegel's teachings, and provides no advantage at all in Kriegel's system.

All rejections are traversed, and will be reversed on appeal.

Accordingly, the Applicant respectfully requests the Examiner to withdraw the § 103 rejection with respect to these claims.

CONCLUSION

As a result of the foregoing, the Applicants assert that the remaining claims in the Application are in condition for allowance, and respectfully requests that this Application be passed to issue.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicants respectfully invite the Examiner to contact the undersigned at the telephone number indicated below or at ***manderson@munckcarter.com***.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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